FINAL REPORT

NEW CULTIVAR DEVELOPMENT AND CULTIVAR EVALUATION TRIALS FOR NATIVE FRUIT SPECIES

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Cultivar Evaluation Trials And New Cultivar Development For Native Fruit Species

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A) Summary

This study involved the first set of comprehensive cultivar trials for all available named cultivars of the chokecherry, pincherry, highbush cranberry, black currant, lingonberry, and blueberry. The objectives of the proposed project were: a) to collect agronomic and fruit quality data from these cultivar trials of prairie native fruit species; b) to evaluate and select new cultivars suitable for production and processing; and c) to establish new cultivar trials where promising, unnamed selections can be compared to existing, named cultivars.

Native fruit cultivar evaluation trials were initially established in the fall of 1994 at 7 locations in Saskatchewan. The trial sites included Outlook (co-operator - SIDC), Indian Head (co-operator - PFRA), Yorkton (co-operator - M. Neuhofer), Nipawin (co-operator - F. Campbell), Love (co-operator - B. Williamson), Pike Lake (co-operator - L. Delorey), and Saskatoon (University of Saskatchewan). All cultivar trials consisted of three replications of five plants per cultivar per replication. The cultivars in the trials varied with location and year of trial establishment, and included : a) black currant - cultivars Black Giant, Boskoop Giant, Consort, Coronet, Crusader, Magnus, Topsy, Wellington, Willoughby, 5-23-42, 5-24-9, 25-23-23, Ben Alder, Ben Lomond, Ben Nevis, Ben Sarek, Consort, Crusader, Magnus, McGinnis Black, Noir de Bourgogne, Titania, Weli:gton, and selection #4-24-9; b) chokecherry - cultivars Copper Schubert, Garrington, Goertz, Lee, Maxi, Mini Schubert, Mission Red, Robert, and Yellow; c) highbush cranberry - cultivars Alaska, Andrews, Garry Pink, Manito, Phillips, Wentworth, CV7, and CV8; d) pincherry - cultivars Jumping Pound, Lee # 4, and Mary Liss; e) blueberry - cultivars North Country, Northblue, and Northsky, Chignecto, Cumberland, Northsky, Chippewa, Patriot, St. Cloud, Polaris and an unnamed selection, C; and f) lingonberry - cultivars Red Pearl, Regal, Sanna, Sussi, and Wisconsin 102. Data collection included survival, growth, sucker production, yield per plant and fruit size. Observations of flowering time, susceptibility to disease and insect problems were also collected. Fruit quality data (pH, titratable acidity, moisture content, soluble solids content, anthocyanin content) were collected, where yields permitted. Fruit quality data are contained in the Progress reports associated with ADF Project 96000249 - **Fruit Quality Screening for the Development and Evaluation of Saskatoon, Chokecherry and other Native Fruit Cultivars and Germplasm.**

The first significant yields were obtained in 1999. The black currant cultivars Wellington and 5-23-42 produced the greatest yields, the equivalent of over 12,000 lbs/acre based on a planting density of 1300 plants/acre. Based on data associated with fruit size, yield and disease ratings, the unnamed accession 5-23-42, 5-23-23, and 5-24-9 all have potential as new cultivars. Additionally, this data suggests that the cultivars Wellington and Consort should be recommended for prairie production in preference to the cultivars Willoughby and Boskoop Giant. The pincherry cultivar Lee #4 produced the most fruit overall, 8.9 kg/plant, which is the equivalent of 15,600 lbs/acre based on a planting density of 800 plants/acre. The highbush cranberry cultivars Wentworth and Gary Pink showed the most promise in terms of total fruit production produced approximately 4 kg/plant which is the equivalent of 7,000 lbs/acre based

on a planting density of 800 plants/acre. The chokecherry cultivar Garrington produced yields of 11.94 kg/plant which is the equivalent of 21,000 lbs/acre based on a planting density of 800 plants/acre. The cultivars Lee, Goertz and Yellow also showed promising levels of fruit production during the 1999 season, ranging from 4.2 to 8.8 kg/plant which is equivalent to 7,400 - 15,400 lbs/acre based on a planting density of 800 plants/acre. The blueberry and lingonberry cultivars did not produce viable yields during these trials.

Achievements of this study have included: a) the development of preliminary agronomic and fruit quality information for the cultivars established in these trials; b) the demonstration of economically viable yields for some cultivars of most of these fruit species after only 5 years of growth; c) the indication of revised recommendations for black currant cultivars for the prairies; d) the forthcoming release of 3 new black currant cultivars; and e) 1 paper in a non-refereed publication, 1 conference proceedings, 10 technical reports, 5 presentations, and 7 experimental and demonstration orchards. Data collection from these trials, the development and distribution of cultivar recommendations, and the propagation and distribution of the new black currant cultivars, will be continued over the next few years using resources associated with the Native Fruit Development Program's Strategic funding from the Agriculture Development Fund.

B) Technical Report

1) Background & Objectives

The widespread cultivation of fruit species in orchards and shelterbelts could significantly contribute to the diversification and health of the prairie agricultural economy by enhancing alternative agricultural production, by promoting the development of mixed farming operations, by providing a more substantive base for a processing industry, by promoting the growth of the fruit processing industry, and ultimately, by providing increased, diversified employment and income for the family farm.

Available market studies suggest that demand for native fruits exceeds supply. Current demand for saskatoons has been estimated at 5 to 6 million pounds annually; it is anticipated that this demand will increase to 12 to 15 million pounds annually over the next few years. The growing trend towards fruit processing will likely drive any major expansion of fruit production in Saskatchewan. A recent study (SIAP's Specialty Berry Market Assessment Study - October 1994) suggests good market opportunities for fruit beverages (from juice concentrates), teas, dried fruit products, and fresh fruit. Processors primarily use cultivated fruit; wild fruit are not consistent in terms of quality (colour, flavour, size, damage from insects and disease). Consistent quality can only be provided by growing properly evaluated cultivars in well-managed orchards.

Progress in the further development of the native fruit industry in Saskatchewan is impeded by a number of factors including inconsistent yields, ill-defined management practices,

and a lack of information concerning the production and processing potential of most native fruit cultivars, fresh product storage and handling practices, fruit quality characteristics, and how fruit quality is affected by management practices.

The expansion of native fruit production in the province is especially dependent upon the testing and evaluation of currently available and potential new cultivars. Processors primarily use cultivated fruit; wild fruit are not consistent in terms of quality (colour, flavour, size, damage from insects and disease). Consistent quality can only be provided by growing properly evaluated cultivars in well-managed orchards. New, different cultivars can only be developed if promising unnamed selections are tested against known cultivars to evaluate their potential. The scientific evaluation and comparison of native fruit cultivars growing together at different sites has not previously been done. Data collected from this activity will allow recommendations about expected cultivar performance to be made to growers, will further the development of promising new cultivars, and will allow future comparisons to be made of fruit processing potential. Additionally, the establishment of mixed native fruit orchards will provide information concerning possible production problems and information which can be used to develop appropriate management practices.

The objectives of the proposed project were to collect agronomic and fruit quality data from these previously established cultivar trials of prairie fruit species (chokecherry, pincherry, highbush cranberry, black currant, lingonberry, and blueberry), to evaluate and select new cultivars suitable for production and processing, and to establish new cultivar trials where promising, unnamed selections can be compared to existing, named cultivars.

2) Activities & Achievements

A) Activities

Native fruit cultivar evaluation trials were established at 7 locations in the province as of September and October 1994. The trial sites included Outlook (co-operator - SIDC), Indian Head (co-operator - PFRA), Yorkton (co-operator - M. Neuhofer), Nipawin (co-operator - F. Campbell), Love (co-operator - B. Williamson), Pike Lake (co-operator - L. Delorey), and Saskatoon (University of Saskatchewan). All cultivar trials consisted of three replications of five plants per cultivar per replication.

Cultivar trials established at the University of Saskatchewan included the following fruits and cultivars: black currant (cultivars Black Giant, Boskoop Giant, Consort, Coronet, Crusader, Magnus, Topsy, Wellington, Willoughby, 5-23-42, 5-24-9, 25-23-23); chokecherry (cultivars Copper Schubert, Garrington, Goertz, Lee, Maxi, Mini Schubert, Mission Red, Robert, Yellow); highbush cranberry (cultivars Alaska, Andrews, Garry Pink, Manito, Phillips, Wentworth, CV7, CV8); and pin cherry (cultivars Jumping Pound, Lee # 4, Mary Liss).

Screening for the Development and Evaluation of Saskatoon, Chokecherry and other Native Fruit Cultivars and Germplasm.

B) Achievements

Achievements of this study have included: a) the development of preliminary agronomic and fruit quality information for the cultivars established in these trials; b) the demonstration of economically viable yields for some cultivars of most of these fruit species after only 5 years of growth; c) the indication of revised recommendations for black currant cultivars for the prairies; d) the forthcoming release of 3 new black currant cultivars; and e) 1 paper in a non-refereed publication, 1 conference proceedings, 10 technical reports, 5 presentations, and 7 experimental and demonstration orchards. Data collection from these trials, the development and distribution of cultivar recommendations, and the propagation and distribution of the new black currant cultivars, will be continued over the next few years using resources associated with the Native Fruit Development Program's Strategic funding from the Agriculture Development Fund.

3) Results, Discussion & Conclusions

Black Currant Cultivar Trials

Data collection was conducted at the University of Saskatchewan, Yorkton, Outlook and Indian Head locations. Survival, growth, yield, fruit size and susceptibility to insect pests and disease data were collected.

The overall performance of the black currant cultivars indicated considerable potential. Winter hardiness was unexpectedly high (Table 1), considering many of these cultivars were developed in much milder climates and have never been grown in Saskatchewan prior to these trials. No cultivars were adversely affected by these minor levels of winter injury and no symptoms were obvious after the plants had leafed out. One plant died from the 1997 cultivar trail, otherwise the survival rate from all of the other trials, in every year, was 100 %.

A summary of growth data is presented in Table 2. In general, black currant growth was difficult to quantify. During the first year of data collection, the change in stem caliper was measured while shoot growth data were collected during subsequent seasons. The switch away from caliper measurements to shoot growth was intended to provide more meaningful information. There appeared to be some differences in shoot growth between cultivar, site and year but there was no obvious relationship between growth and fruit yield. Shoot growth varied from 21.5 to 78.7 cm, depending on cultivar and growing season.

The cultivars Wellington and 5-23-42 produced the greatest yields (equivalent to over 12,000 lbs/acre based on a planting density of 1300 plants/acre). Ranking of the cultivars by

yield and fruit size (Table 4) placed Wellington with the greatest yield and among the largest fruited cultivars tested in these trials. Wellington was also noted as being relatively easy to pick compared to most of the other cultivars tested. The cultivar Consort and the numbered selection 5-23-42 also had higher than average yields (Tables 3 and 4). The selection 5-23-42 had the largest fruit size (Table 4). The cultivars Willoughby and Boskoop Giant are traditionally recommended on the prairies but ranked very poorly based on yield and fruit size (Table 4). Willoughby was also shown to be extremely susceptible to white pine blister rust and quite susceptible to powdery mildew (Table 5). The cultivars Wellington and Consort appeared to be resistant to white pine blister rust and only slightly susceptible to powdery mildew. The numbered selection 5-23-42 demonstrated resistance to powdery mildew.

Based on data collected during the 1999 season, early-, mid- and late-flowering cultivars were identified (Table 6). The cultivar Black Giant flowered much earlier than the other cultivars tested but since it is *Ribes aureum* rather than *Ribes nigrum* it was excluded from this list. It is unclear, at this time, which of these cultivars require pollinator plants to maximize yields but interplanting with cultivars from the same flowering group is recommended to ensure the availability of xenic pollen. Note that at the Outlook site, good yields were obtained where Wellington and Consort were the only cultivars with overlapping flowering periods.

The black currant trial planted in 1997 produced some fruit during the 1999 season. The data presented in Table 7 provide some preliminary information regarding some of these promising cultivars, which were originally considered too vulnerable to winter injury to be tested in Saskatchewan. None of the new cultivars tested in this trial showed signs winter injury (Table 1). The Ben series from Scotland and the cultivar McGinnis Black appeared to be relatively early-yielding and had very large fruit.

Based on data associated with fruit size, yield and disease ratings, the unnamed accession 5-23-42, 5-23-23, and 5-24-9 all have potential as new cultivars. Additionally, this data suggests that the cultivars Wellington and Consort should be recommended for prairie production in preference to the cultivars Willoughby and Boskoop Giant.

Table 1. Winter damage in black currant cultivar trials, May 1999.						
Cultivar	**Site**					
	Outlook	**Indian Head**	**U of S Site 1**	**U of S Site 2**	**Yorkton**	**Mean**
25-23-23	.	.	0	.	0	0
5-23-42	.	.	0	.	0	0
5-24-9	.	.	0.3	0	0	0.1
Ben Alder	.	.	.	0	.	0
Ben Lomond	.	.	.	0	.	0
Ben Nevis	.	.	.	0	.	0
Ben Sarek	.	.	.	0	.	0
Black Giant	.	.	0	.	0.3	0.15
Boskoop Giant	.	.	0.3	.	0.3	0.3
Consort	0	0.3	0	0.3	0.3	0.18
Coronet	.	.	0.3	.	.	0.3
Crusader	.		0	0.7	.	0.35
Magnus	.	.	0.3	1.7	0	0.67
McGinnis Black	.	.	.	0	.	0
Noire de Bourgogne	.	.	.	0.3	.	0.3
Titania	.	.	.	0	.	0
Topsy	.	.	0.3		0.3	0.3
Wellington	0	0	0	0	0	0
Willoughby	0.7	0.7	0	.	0	0.04

Rating of 1998/1999 winter injury.
0 = No damage; 1 = Slight damage; 2 = Low; 3 = Moderate; 4 = High.
Treatment block of 5 plants were evaluated as a single unit in all 3 replicates.
A period indicates the cultivar was not planted at this location.

Table 2. Black currant survival and growth, 1997, 1998 and 1999.

Site	Cultivar	Survival % (all years)	Growth*		
			1997 Stem Caliper (mm)	1998 Shoot Growth (cm)	1999 Shoot Growth (cm)
Indian Head	Consort	100 +/- 0	2.6 +/-0.4	24.9 +/- 2.8	34.7 +/-12.0
	Wellington	100 +/- 0	1.7 +/-1.4	50.5 +/- 4.8	35.1+/-3.2
	Willoughby	100 +/- 0	3.1 +/-1.3	34.1 +/- 4.6	27.6 +/-6.6
Outlook	Consort	100 +/- 0	3.7 +/-0.5	47.2 +/- 6.3	29.8 +/- 2.1
	Wellington	100 +/- 0	4.1 +/-1.1	46.7 +/- 4.3	27.9 +/-1.9
	Willoughby	100 +/- 0	4.1 +/-0.3	46.4 +/- 2.5	22.6 +/-2.0
U of S	Black Giant	100 +/- 0	3.5 +/-2.4	51.9 +/- 13.1	24.8 +/-3.5
	Boskoop Giant	100 +/- 0	3.9 +/-1.3	58.8 +/- 1.7	31.9 +/-5.2
	Consort	100 +/- 0	5.5 +/-0.6	53.6 +/- 11.2	29.2 +/-1.4
	Coronet	100 +/- 0	6.1 +/-1.2	64.5 +/- 5.5	28.5 +/-2.1
	Crusader	100 +/- 0	5.3 +/- 3.3	78.7 +/- 4.1	30.0 +/-2.3
	5-23-42	100 +/- 0	4.6 +/-1.2	35.9 +/- 3.2	27.2 +/-2.1
	Magnus	100 +/- 0	4.8 +/- 1.7	57.1 +/- 2.7	31.1 +/-1.4
	5-24-9	100 +/- 0	2.4 +/-0.5	51.9 +/- 1.1	27.9 +/-1.8
	Topsy	100 +/- 0	5.2 +/-2.2	50.4 +/- 1.9	29.5 +/-5.95
	25-23-23	100 +/- 0	4.8 +/-1.7	48.8 +/- 6.5	30.8 +/-0.93
	Wellington	100 +/- 0	3.6 +/-1.5	49.8 +/- 1.9	28.7 +/-1.0
	Willoughby	100 +/- 0	4.7 +/-0.6	50.7 +/- 6.3	23.3 +/-2.02
Yorkton	Black Giant	100 +/- 0	3.3 +/-0.5	51.5 +/- 2.4	35.2 +/-5.2
	Boskoop Giant	100 +/- 0	2.0 +/-0.7	56.5 +/- 5.7	23.7 +/-4.8
	Consort	100 +/- 0	1.7 +/-0.5	60.1 +/- 11.1	21.5 +/-5.2
	5-23-42	100 +/- 0	2.6 +/-1.6	39.3 +/- 9.1	28.0 +/-3.8
	Magnus	100 +/- 0	3.1 +/-1.4	47.8 +/- 5.0	27.9 +/-4.25
	5-24-9	100 +/- 0	3.1 +/-0.4	45.4 +/- 3.8	35.9 +/-4.18
	Topsy	100 +/- 0	2.9 +/-1.9	46.9 +/- 6.6	28.4 +/-7.64
	25-23-23	100 +/- 0	2.9 +/-0.8	49.3 +/- 1.7	39.0 +/-3.0
	Wellington	100 +/- 0	2.5 +/-0.6	59.4 +/- 5.3	27.7 +/-8.2
	Willoughby	100 +/- 0	2.5 +/-0.8	51.9 +/- 6.1	27.0 +/-6.4

Mean of 3 replicates. +\- values are the standard deviation of the mean.
*Mean growth was measured from stem caliper in 1997, and from shoot growth in 1998 & 1999.

Table 3. Black currant cultivar trial yield and fruit size, 1997, 1998 and 1999.

Site	Cultivar	1997		1998		1999	
		Yield / bush (kg)	Mean fruit wt (g)	Yield / bush (kg)	Mean fruit per cup	Yield / bush (kg)	Mean fruit per cup
Indian Head	Consort	0.066 +/- 0.060	0 17 +/- 0 13	0 05 +/- 0.05	368 +/- 74	na	na
	Wellington	0 +/-0	na	0	184 +/- na	na	na
	Willoughby	0 027 +/- 0.014	0.50 +/- 0.05	0.02 +/- 0.03	297 +/- 77	na	na
Outlook	Consort	0.701 +/- 0.475	0.46 +/- 0 04	0.21 +/- 0 05	353 +/- 22	6 2 +/- 1 4	268 +/- 12
	Wellington	0.787 +/- 0.454	0.85 +/- 0.07	1.03 +/- 0.17	180 +/- 28	8.2 +/- 0.94	140 +/- 16
	Willoughby	0 042 +/- 0 031	0 61 +/-0 03	0 20 +/- 0 10	250 +/- 28	0	188 +/- 18
U Of S	Black Giant	0	na	0	na	0	na
	Boskoop Giant	0	na	0	na	0 3 +/- 0 54	190 +/- 39
	Consort	0	na	0.15 +/- 0.05	199 +/- na	6.2 +/- 2.1	175 +/- 56
	Coronet	0	na	0	na	3 1 +/- 0 5	162 +/- 55
	Crusader	0	na	0	na	3 8 +/- 0 9	198 +/- 27
	5-23-42	0	na	0 05 +/-0 01	206 +/- 23	5 9 +/- 0 6	122 +/- 17
	Magnus	0	na	0.01 +/- 0 01	na	2 5 +/- 0 2	193 +/- 5 5
	5-24-9	0	na	0	na	2 5 +/- 0 4	116 +/- 10
	Topsy	0	na	0	na	1 8 +/- 0 9	184 +/- 10
	25-23-23	0	na	0	na	3 0 +/- 0 2	136 +/- 37
	Wellington	0	na	0 07 +/- 0	211 +/- 20	5 5 +/- 0 9	153 +/- 40
	Willoughby	0	na	0	na	0 9+/- 0 4	177 +/- 33
Yorkton	Black Giant	0	na	0	na	0	na
	Boskoop Giant	0 180 +/- 0 171	0 53 +/- 0 08	0 23 +/- 0 17	199 +/- 17	0 4 +/- 0 3	218 +/- 23
	Consort	0 704 +/- 1 062	0 54 +/- 0 08	0 19 +/- 0 14	213 +/- 12	2 0 +/- 0 9	200 +/- 4
	5-23-42	0 362 +/- 0 547	0 49 +/- 0 38	0 49 +/- 0 41	141 +/- 2	2 6 +/- 0 3	141 +/- 22
	Magnus	0	na	0 01 +/- 0 01	217 +/- na	0 4 +/- 0 3	221 +/- 13
	5-24-9	0 002 +/- 0 002	0 37+/- 0 28	0 07 +/- 0 03	167 +/- 24	1 3 +/- 0 5	180 +/- 36
	Topsy	0	na	0 06 +/- 0 04	250 +/- na	0 1 +/- 0 1	243 +/- 29
	25-23-23	0 388 +/- 0 542	0 83 +/- 0 11	0 28 +/- 0 15	131 +/- 18	1 4 +/- 0 4	141 +/- 11
	Wellington	0.483 +/- 0.487	0.92 +/- 0.21	0.94 +/- 0.38	138 +/- 14	4.0 +/- 0.6	130 +/- 3
	Willoughby	0.039 +/- 0.038	0.66 +/- 0 05	0.11 +/- 0 06	171 +/- 21	0 6 +/- 0 2	169 +/- 6

Mean of 3 replicates. +\- values are the standard deviation of the mean.

Table 4. Ranking of black currant cultivars grown at the Yorkton and U of S sites by mean fruit size and yield produced during the 1999 season.

Largest Fruit	Fruit # Per Cup	Cultivar	Highest Yield	Yield / Bush (kg)	Cultivar
	132	5-23-42		4.8	Wellington
	138	45,068		4.3	5-23-42
	142	Wellington		4.1	Consort
	149	5-24-9		2.2	5-23-23
	178	Willoughby *		1.9	5-24-9
	186	Consort		1.5	Magnus
	207	Magnus		1.0	Topsy
	208	Topsy		0.75	Willoughby *
Smallest Fruit	211	Boskoop Giant *	**Lowest Yield**	0.4	Boskoop Giant *

* Cultivars traditionally recommended for the prairie provinces.

Table 5. Mean powdery mildew, white pine blister rust and leaf spot ratings for black currant cultivars (scale: 0 = no infection; 1 = trace; 2 = low; 3 = moderate; 4 = high)			
Cultivar	**Rust**	**Mildew**	**Leaf Spot**
45,068	1.7	1	2.8
5-23-42	**3.3**	**0**	**3.5**
5-24-9	3.7	0	3.3
Black Giant	0	0	0
*Boskoop Giant	1	2	2.8
Consort	**0**	**2**	**3.3**
Coronet	na	na	3.2
Crusader	na	na	3.5
Magnus	4	3	3.5
Topsy	3.7	2.7	3.3
Wellington	**0**	**1.3**	**3**
*Willoughby	4	2.7	3.7
Disease ratings were collected during years and at sites with high disease pressure. Rust and mildew data were collected at Yorkton during the 1998 season. The leaf spot data were collected at the Uof S during the 1999 season. The top yielding cultivars from this trial are shown in bold font. An * was used to indicate cultivars traditionally recommended for the prairies.			

Table 6. Relative ranking of flowering time in black currant cultivars.		
Early	**Mid**	**Late**
Boskoop Giant Coronet	5-23-42 5-24-9 Consort Crusader Wellington	25-23-23 Magnus Topsy Willoughby

Table 7. Comparative performance of black currant cultivars from the 1997 trial.			
Cultivar	**Survival (%)**	**Mean Yield (kg/bush)**	**Mean Fruit # Per Cup**
5-24-9	93 +/- 12	0	na
Ben Alder	100 +/- 0	0.28 +/- 0.18	122 +/- 15
Ben Lomond	100 +/- 0	0.05 +/- 0.09	97
Ben Nevis	100 +/- 0	1.28 +/- 0.70	101 +/- 8
Ben Sarek	100 +/- 0	0.25 +/- 18	87 +/- 8
Consort	100 +/- 0	0	na
Crusader	100 +/- 0	0	na
Magnus	100 +/- 0	0	na
McGinnis Black	100 +/- 0	0.24 +/- 12	99 +/- 7
Noir de Bourgogne	100 +/- 0	0	na
Titania	100 +/- 0	0	na
Wellington	100 +/- 0	0	na
Mean of 3 replicates. +\- values are the standard deviation of the mean.			

Pincherry Cultivar Trials

The pincherry trials established very rapidly. The plants grew very tall at the Indian Head and U of S sites which impeded harvest at these sites. Sucker production was generally found to be quite aggressive. At the Outlook site, sucker production was initially much lower than the other sites (Table 8), however this trend diminished in later years. A significant amount of pruning and removal of suckers would be required if this fruit species was to be grown on a commercial scale. Differences between cultivar growth rates were not discernible from the data collected during the trial period.

Fruit production, growth, suckering, yield and fruit size data were collected during the 1997, 1998 and 1999 seasons (Tables 8-10). Inconsistent yields characterized the pincherry trials (Tables 8-10). During the 1997 season, yields were highest at the University of Saskatchewan site, and no fruit were produced at Outlook. At Indian Head, the cultivar Jumping Pound produced more fruit than Lee # 4 and Mary Liss. There was also no fruit at Outlook and Indian Head locations during the 1998 season. Overall fruit production declined at the U of S from the 1997 season.

The greatest fruit production occurred during the 1999 season, with the most fruit production occurring at the Outlook site. A very high level of wild and domestic bee activity was observed in 1999 at the Outlook location which would have ensured good cross-pollination and may have contributed to the higher yields. There were no fruit produced at the Indian Head site. Fruit production at the UofS site was similar for all cultivars. The combined results from all sites and years (Table 11) showed the cultivar Lee #4 producing the most fruit overall (8.9 kg/plant which is the equivalent of 15,600 lbs/acre based on a planting density of 800 plants/acre. No differences in mean fruit size were observed among the cultivars tested.

Inconsistent fruit production was in part caused by early spring frosts. The cultivars Jumping Pound and Mary Liss have approximately synchronous flowering periods. The cultivar Lee #4 flowered sightly earlier, which may increase this cultivars vulnerability to frost damage. Insect pests, such as thrips have been associated with pincherry blossom damage, and probably play a role in yield loss. A registered insect control method would likely be required to prevent significant flower damage. The primary pest observed in the pincherry trials was the cherry fruit maggot. The cultivar Jumping Pound seemed particularly prone to this pest but some larvae were found in fruit of all the cultivars tested. Some leaf spot was observed during the 1999 season, likely the result of the unseasonably wet summer. Chemical control of cherry fruit maggot is essential to ensure a high level of fruit quality.

Table 8. Agronomic characteristics of pincherry cultivars, 1997.						
Site	**Cultivar**	**Survival (%)**	**Mean Caliper Growth (mm)**	**Suckers / plant**	**Yield (kg/plant)**	**Mean Fruit Weight (g)**
Indian Head	Jumping Pound	100 +/- 0	13.8 +/- 2.0	9.3 +/- 4.8	**0.47** +/- 0.24	0.49 +/- 0.01
	Lee # 4	100 +/- 0	8.6 +/- 2.5	9.9 +/- 1.8	0.26 +/- 0.34	**0.42** +/- 0.03
	Mary Liss	100 +/- 0	10.8 +/- 2.1	9.5 +/- 2.1	0.23 +/- 0.31	na
Outlook	Jumping Pound	100 +/- 0	10.7 +/- 1.3	0.5 +/- 0.4	0 +/- 0	na
	Lee # 4	100 +/- 0	13.6 +/- 3.6	0.2 +/- 0.4	0 +/- 0	na
	Mary Liss	100 +/- 0	16.0 +/- 8.9	0.2 +/- 0.2	0 +/- 0	na
U of S	Jumping Pound	100 +/- 0	15.8 +/- 0.9	4.5 +/- 2.5	0.49 +/- 0.32	0.51 +/- 0.03
	Lee # 4	100 +/- 0	13.1 +/- 3.5	8.11 +/- 3.6	**0.63 +/- 0.19**	0.47 +/- 0.02
	Mary Liss	100 +/- 0	13.3 +/- 4.8	6.0 +/- 2.6	**0.59 +/- 0.23**	**0.52 +/- 0.02**

Mean of 3 replicates. +\- values are the standard deviation of the mean.

Table 9. Agronomic characteristics of pincherry cultivars, 1998.					
Site	**Cultivar**	**Survival**	**Mean Shoot Growth (cm)**	**Yield (kg / plant)**	**Mean Fruit # per cup**
Indian Head	Jumping Pound	100 +/- 0	40.8 +/- 13.6	0	na
	Lee # 4	100 +/- 0	64.4 +/- 13.3	0	na
	Mary Liss	100 +/- 0	39.3 +/- 11.9	0	na
Outlook	Jumping Pound	100 +/- 0	53.9 +/- 1.7	0	na
	Lee # 4	100 +/- 0	46.3 +/- 4.7	0	na
	Mary Liss	100 +/- 0	49.2 +/- 9.8	0	na
U of S	Jumping Pound	100 +/- 0	57.9 +/- 14.1	0.44 +/- 0.39	321 +/- 76
	Lee # 4	100 +/- 0	43.0 +/- 10.3	0 +/- 0	na
	Mary Liss	100 +/- 0	51.8 +/- 2.1	**0.56 +/- 0.22**	**278 +/- 30**
Mean of 3 replicates. +\- values are the standard deviation of the mean.					

Table 10. Agronomic characteristics of pincherry cultivars, 1999.					
Site	**Cultivar**	**Survival**	**Mean Shoot Growth (cm)**	**Yield (kg / plant)**	**Mean Fruit # per cup**
Indian Head	Jumping Pound	100 +/- 0	50.5 +/- 9.2	0 +/- 0	na
	Lee # 4	100 +/- 0	46.6 +/- 9.3	0 +/- 0	na
	Mary Liss	100 +/- 0	60.1 +/- 14.3	0 +/- 0	na
Outlook	Jumping Pound	100 +/- 0	45.1 +/- 1.6	3.79 +/- 2.3	**210** +/- 3.0
	Lee # 4	100 +/- 0	30.4 +/- 2.3	**11.3 +/- 3.1**	213 +/- 9.5
	Mary Liss	100 +/- 0	57.8 +/- 10.6	2.73 +/- 0.5	215 +/- 23.0
U of S	Jumping Pound	100 +/- 0	28.5 +/- 8.5	1.60 +/- 1.4	172 +/- 13.7
	Lee # 4	100 +/- 0	50.6 +/- 24.3	**6.40** +/- 3.2	**165** +/- 14.2
	Mary Liss	100 +/- 0	38.3 +/- 9.2	3.84 +/- 1.1	184 +/- 11.0
Mean of 3 replicates. +\- values are the standard deviation of the mean.					

Table 11. Agronomic characteristics of pincherry cultivars, all sites combined					
Year	**Cultivar**	**Survival**	***Mean Shoot Growth (cm)**	**Yield (kg / plant)**	**Mean Fruit # per cup**
1997	Jumping Pound	100 +/- 0	13.4 +/- 4.6	0.31 +/- 0.31	0.49 +/- 0.02
	Lee # 4	100 +/- 0	11.8 +/- 3.7	0.30 +/- 0.33	0.44 +/- 0.04
	Mary Liss	100 +/- 0	13.4 +/- 5.6	0.28 +/- 0.32	0.52 +/- 0.02
1998	Jumping Pound	100 +/- 0	50.9 +/- 12.5	0.15 +/- 0.30	na
	Lee # 4	100 +/- 0	51.4 +/- 13.1	0 +/- 0	na
	Mary Liss	100 +/- 0	46.8 +/- 9.7	0.19 +/- 0.30	na
1999	Jumping Pound	100 +/- 0	41.4 +/- 11.8	2.69 +/- 2.1	191 +/- 22
	Lee # 4	100 +/- 0	42.5 +/- 16.1	8.9 +/- 3.9	189 +/- 28
	Mary Liss	100 +/- 0	52.1 +/- 14.5	3.2 +/- 1.0	200 +/- 24

Mean of 3 replicates. Mean of sites for each cultivar. +\- values are the standard deviation of the mean.
* Note that 1997 growth data is reported as stem caliper growth in mm.

Highbush Cranberry Cultivar Trials

Data collection was conducted at the University of Saskatchewan, Outlook, and Indian Head sites. Survival, growth, yield and fruit size data were collected (Tables 12-14). Observations of susceptibility to insect pests and disease problems were also recorded.

Mite damage was commonly observed during the trial period although it is unlikely that this pest had a significant impact on fruit production. Frost during blooming and caterpillar damage were the primary factors causing fruit loss in this species.

The cultivar Phillips tended to have the fastest growth rate, up to 71 cm of shoot growth/season. This was most evident at the Indian Head site. In general, the growth rate of this species was quite slow relative to the other fruit species in this trial. Several more years of growth would be required to bring this crop to full production.

The 1999 season (Table 14) provided the only yield data collected during the trial period and these results should be considered preliminary. The cultivars Wentworth and Gary Pink showed the most promise in terms of total fruit production (approximately 4 kg/plant which is the equivalent of 7,000 lbs/acre based on a planting density of 800 plants/acre). The cultivar Alaska had the largest fruit. The cultivar Phillips had the lowest yields and also had the smallest fruit.

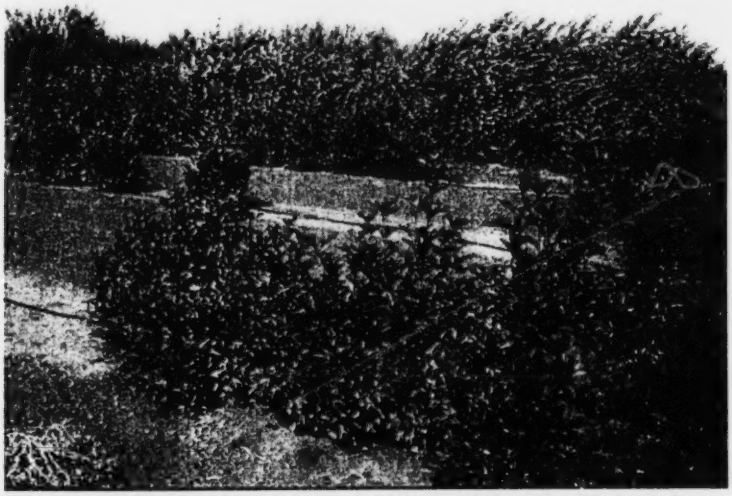

Figure 1. Highbush cranberry cultivar trial at the University of Saskatchewan.

Table 12. Agronomic characteristics of highbush cranberry cultivars, 1997.				
Site	**Cultivar**	**Survival (%)**	**Mean Shoot Growth (cm)**	**# of Suckers/ Plant**
Indian Head	Alaska	100 +/- 0	32.6 +/- 7.9	0
	Phillips	100 +/- 0	71.3 +/- 7.4	0
	Wentworth	100 +/- 0	34.0 +/- 7.8	0
Outlook	Alaska	96.7 +/- 11.5	20.4 +/- 3.9	0
	Phillips	66.7 +/- 30.6	38.2 +/- 8.0	0
	Wentworth	100 +/- 0	29.7 +/- 7.0	0
U of S	Alaska	100 +/- 0	17.8 +/- 1.6	0
	Andrews	100 +/- 0	18.4 +/- 2.9	0
	CV7	100 +/- 0	16.6 +/- 5.8	0
	Gary Pink	100 +/- 0	35.0 +/- 8.9	0
	Manito	100 +/- 0	30.1 +/- 3.4	0
	Phillips	100 +/- 0	30.8 +/- 4.1	0
	Wentworth	100 +/- 0	23.1 +/- 0.4	0
Mean of 3 replicates. +\- values are the standard deviation of the mean.				

Table 13. Agronomic characteristics of highbush cranberry cultivars, 1998.				
Site	**Cultivar**	**Survival (%)**	**Mean Shoot Growth (cm)**	**# of Suckers/ Plant**
Indian Head	Alaska	100 +/- 0	39.6 +/- 1.7	0
	Phillips	100 +/- 0	61.7 +/- 5.7	0
	Wentworth	100 +/- 0	45.1 +/- 5.1	0
Outlook	Alaska	100 +/- 0	19.0 +/- 3.9	0
	Phillips	100 +/- 0	21.6 +/- 1.5	0
	Wentworth	100 +/- 0	24.6 +/- 2.4	0
U of S	Alaska	100 +/- 0	34.3 +/- 8.4	0
	Andrews	100 +/- 0	32.9 +/- 3.7	0
	CV7	100 +/- 0	22.2 +/- 4.5	0
	Gary Pink	100 +/- 0	47.8 +/- 6.9	0
	Manito	100 +/- 0	38.8 +/- 20.3	0
	Phillips	100 +/- 0	50.4 +/- 13.2	0
	Wentworth	100 +/- 0	33.3 +/- 5.6	0
Mean of 3 replicates. +\- values are the standard deviation of the mean.				

Table 14. Agronomic characteristics of highbush cranberry cultivars, 1999.					
Site	**Cultivar**	**Survival (%)**	**Mean Shoot Growth (cm)**	**Yield (kg/plant)**	**Fruit # per cup**
Indian Head	Alaska	100 +/- 0	43.0 +/- 6.7	1.23 +/- 0.98	201 +/- 19
	Phillips	100 +/- 0	64.9 +/- 7.1	0.14 +/- 0.13	432 +/- 14
	Wentworth	100 +/- 0	58.9 +/- 3.3	2.17 +/- 0.89	231 +/- 12
Outlook	Alaska	100 +/- 0	41.9 +/- 11.1	0.29 +/- 0.22	245 +/- 32
	Phillips	100 +/- 0	58.2 +/- 9.2	0.13 +/- 0.09	283 +/- 96
	Wentworth	100 +/- 0	49.4 +/- 7.2	1.12 +/- 0.79	277 +/- 26
U of S	Alaska	100 +/- 0	47.8 +/- 4.7	2.27 +/- 0.92	201 +/- 19
	Andrews	100 +/- 0	31.2 +/- 4.5	0.50 +/- 0.18	337 +/- 37
	CV7	100 +/- 0	32.0 +/- 1.9	0 +/- 0	na
	Gary Pink	100 +/- 0	51.4 +/- 4.2	4.15 +/- 2.96	254 +/- 10
	Manito	100 +/- 0	47.0 +/- 11.4	2.12 +/- 1.30	200 +/- 12
	Phillips	100 +/- 0	50.1 +/- 3.6	0.32 +/- 0.11	337 +/- 31
	Wentworth	100 +/- 0	41.9 +/- 1.8	3.96 +/- 0.84	268 +/- 21
Mean of 3 replicates. +\- values are the standard deviation of the mean.					

Chokecherry Cultivar Trials

Data collection was conducted at the University of Saskatchewan, Outlook, and Indian Head sites. Survival, growth, yield, fruit size, and sucker production (Tables 15-17) were collected. Observations of susceptibility to insect pests and disease problems were also collected. Caterpillar damage resulted in the greatest fruit loss during these trials. Chemical control was used during the 1998 and 1999 seasons but no pesticides are currently registered for commercial purposes. Some chemical insect control is essential for the successful commercialization of this species. The cultivar Garrington produced the greatest yields (Table 17) (11.94 kg/plant which is the equivalent of 21,000 lbs/acre based on a planting density of 800 plants/acre). The cultivars Lee, Goertz and Yellow showed promising levels of fruit production during the 1999 season (Table 17) (4.2 to 8.8 kg/plant which is equivalent to 7,400 - 15,400 lbs/acre based on a planting density of 800 plants/acre). The cultivar Lee tended to have the largest fruit. Fruit production during the 1999 season increased substantially over previous years. Fruit production at the Outlook site was very uniform among the cultivars tested. On average, the cultivar Garrington produced more fruit than all other cultivars tested (Table 17).

The chokecherry cultivars tested in these trials produced a variety of fruit colours ranging from yellow through orange to red and black (Table 18). The blooming period for the most of the cultivars tested was approximately synchronous (Table 19). The exceptions were the cultivar Maxi which flowered very early while the cultivars Mission Red and Yellow flowered slightly later than the rest. These observations would suggest a number of pollinator options which could be used with the cultivar Garrington.

Figure 2. Chokecherry cultivars (l to r): Yellow, Lee, Robert, Garrington.

Table 15. Agronomic characteristics of chokecherry cultivars, 1997.				
Site	**Cultivar**	**Survival (%)**	**Growth (mm)**	**# of Suckers/ Plant**
Indian Head	Garrington	100 +/- 0	6.3 +/- 1.7	2.8 +/- 1.8
	Lee	100 +/- 0	7.5 +/- 0.1	2.6 +/- 0.8
	Yellow	67 +/- 11.5	6.7 +/- 0.9	0 +/- 0
Outlook	Garrington	100 +/- 0	4.9 +/- 2.3	0.8 +/- 1.1
	Lee	100 +/- 0	7.2 +/- 0.7	0.4 +/- 0.5
	Yellow	100 +/- 0	7.7 +/- 3.2	0.1 +/- 0.0
U of S	Copper Schubert	80 +/- 20.0	5.4 +/- 0.5	0 +/- 0
	CV10	53 +/- 11.5	2.2 +/- 2.7	0 +/- 0
	Garrington	100 +/- 0	6.6 +/- 1.1	0.7 +/- 0.3
	Goertz	100 +/- 0	5.1 +/- 0.5	0.3 +/- 0.5
	Lee	100 +/- 0	7.6 +/- 2.3	0.3 +/- 0.5
	Maxi	100 +/- 0	8.1 +/- 2.5	0 +/- 0
	Mission Red	47 +/- 11.5	na	0 +/- 0
	Robert	100 +/- 0	6.8 +/- 1.6	0 +/- 0
	Yellow	100 +/- 0	8.2 +/- 2.1	0.1 +/- 0.1
Mean of 3 replicates. +\- values are the standard deviation of the mean.				

Table 16. Agronomic characteristics of chokecherry cultivars, 1998.						
Site	**Cultivar**	**Survival (%)**	**Growth (cm)**	**# of Suckers per Plant**	**Yield (kg / plant)**	**Mean Fruit # per cup**
Indian Head	Garrington	100 +/- 0	48.0 +/- 15.9	1.7 +/- 0.3	0.807 +/- 0.30	na
	Lee	100 +/- 0	55.6 +/- 4.4	1.6 +/- 0.5	0 +/- 0	na
	Yellow	100 +/- 0	52.7 +/- 7.9	0.9 +/- 0.8	0 +/- 0	na
Outlook	Garrington	100 +/- 0	38.9 +/- 5.4	2.2 +/- 1.3	0.24 +/- 0.15	266 +/- 52
	Lee	100 +/- 0	44.4 +/- 5.5	1.9 +/- 1.0	0.06 +/- 0.04	205 +/- 10
	Yellow	100 +/- 0	46.7 +/- 2.7	0.2 +/- 0.4	0.50 +/- 0.21	285 +/- 18
U of S	Copper Schubert	100 +/- 0	43.4 +/- 14.8	0.1 +/- 0.2	0 +/- 0	na
	CV10	100 +/- 0	49.8 +/- 22.1	0.1 +/- 0.2	0 +/- 0	na
	Garrington	100 +/- 0	50.8 +/- 8.8	2.0 +/- 0.9	0.06 +/- 0.00	248 +/- 7
	Goertz	100 +/- 0	43.3 +/- 4.9	0.4 +/- 0.2	0 +/- 0	na
	Lee	100 +/- 0	48.2 +/- 10.9	3.2 +/- 1.0	0 +/- 0	na
	Maxi	100 +/- 0	71.4 +/- 12.6	0.4 +/- 0.2	0 +/- 0	na
	Mission Red	100 +/- 0	40.5 +/- 6.0	0 +/- 0	0 +/- 0	na
	Robert	100 +/- 0	53.2 +/- 6.4	0.4 +/-0.4	0 +/- 0	na
	Yellow	100 +/- 0	50.6 +/- 7.7	2.3 +/- 0.3	0.36 +/- 0.18	245 +/- 27.8
Mean of 3 replicates. +\- values are the standard deviation of the mean.						

Table 17. Agronomic characteristics of chokecherry cultivars, 1999.						
Site	**Cultivar**	**Survival (%)**	**Growth (cm)**	**# of Suckers/ Plant**	**Yield (kg / plant)**	**Mean Fruit # per cup**
Indian Head	Garrington	100 +/- 0	53.7 +/-4.7	1.0 +/- 1.0	5.37 +/- 1.8	na
	Lee	100 +/- 0	61.9 +/- 1.9	1.6 +/- 0.7	2.87 +/- 1.1	na
	Yellow	100 +/- 0	48.8 +/- 3.9	0.8 +/- 0.7	0.28 +/- 0.2	na
Outlook	Garrington	100 +/- 0	30.7 +/- 3.5	4.9 +/- 2.5	7.93 +/- 2.8	272 +/- 50
	Lee	100 +/- 0	36.2 +/- 0.9	4.6 +/- 1.8	6.12 +/- 2.1	215 +/- 9.5
	Yellow	100 +/- 0	30.8 +/- 2.0	3.3 +/- 0.7	6.24 +/- 2.7	268 +/- 21
U of S	Copper Schubert	100 +/- 0	78.1 +/- 10.0	0.3 +/- 0.6	0.84 +/- 0.7	187 +/- 0
	CV10	100 +/- 0	62.8 +/- 5.5	1.2 +/- 1.2	0 +/- 0	na
	Garrington	100 +/- 0	49.3 +/- 1.3	1.6 +/- 0.4	11.94 +/- 1.3	207 +/- 37
	Goertz	100 +/- 0	61.1 +/- 7.0	1.2 +/- 0.7	8.76 +/- 1.6	190 +/- 7
	Lee	100 +/- 0	54.0 +/- 3.0	2.5 +/- 2.0	4.20 +/- 1.4	177 +/- 12
	Maxi	100 +/- 0	81.9 +/- 9.7	0 +/- 0	0 +/- 0	na
	Mission Red	100 +/- 0	58.7 +/- 3.0	0 +/- 0	1.05 +/- 0.8	243 +/- 29
	Robert	100 +/- 0	66.7 +/- 6.7	0.2 +/- 0.4	1.66 +/- 0.8	148 +/- 4.9
	Yellow	100 +/- 0	56.5 +/- 1.5	2.0 +/- 1.2	4.21 +/- 0.7	195 +/- 23
Mean of 3 replicates. +\- values are the standard deviation of the mean.						

Table 18. Mature fruit colour of chokecherry cultivars.				
Fruit Colour	Yellow	Orange	Red	Black
Cultivar	Yellow	Cultivar 10	Mission Red Lee Robert	Garrington Goertz Copper Schubert

Table 19. Ranking of chokecherry cultivars by blooming time.			
Very Early	**Early**	**Mid**	**Late**
Maxi		Cultivar 10 Copper Schubert Lee Garrington Goertz Robert	Mission Red Yellow

Blueberry and Lingonberry Cultivar Trials

Observations of the blueberry and lingonberry plots located at the University of Saskatchewan, Pike Lake, Nipawin and Love locations were conducted during the 1997, 1998 and 1999 seasons. Survival data were collected at all sites (Tables 20-21). Yield data were collected where fruit production occurred (Table 22).

It was more difficult to successfully manage these two species than initially anticipated. Overcoming difficulties with soil pH management and developing a feel for the particular needs of these crops required a certain amount of trial and error. Our management of these crops has been most successful under very controlled conditions, such as the nursery environment where our inventory is kept. A growing medium consisting of 100% peat provided the best results for both of these species. Blueberry plants proved to be very sensitive to under-watering and were easily set back if soil moisture became depleted.

During the 1997 season, an additional lingonberry trial was planted at Nipawin in August at a pH-modified site. This site was added due to our previous success with a demonstration planting of blueberries. The cultivars Regal, Sussi and Sanna were planted. Due to difficulty in maintaining a suitably low pH at the University of Saskatchewan site, a new, expanded facility was constructed during the fall of 1997. A medium consisting of peat moss and sawdust was used in this bed. This new location and medium was expected to eliminate previous pH problems and provide room for expansion. Three lowbush blueberry varieties (Cumberland, Chignecto, and an unnamed clone) were obtained and were planted at Nipawin and at the University of Saskatchewan during the spring of 1998.

During the 1999 season, another blueberry cultivar trial was established at the University of Saskatchewan site. This trial included low-bush and half-high blueberry types. To overcome the high pH of the soil, this trial was planted in pots filled with peat moss which were placed in slightly larger pots set below the soil surface. This novel method of blueberry production is an adaptation of the pot-in-pot nursery production technique. It allows plants to be kept separate from the soil but the plants overwinter as if they were planted directly into the ground. Cultivars grown in this trial included Chignecto, Cumberland, Northsky, Chippewa, Patriot, St. Cloud, Polaris and an unnamed clone developed at the University of Saskatchewan identified as C.

No significant fruit production was observed at any of the trial locations until the 1999 season when a small amount of lingonberry fruit was obtained (Table 22). The yields produced during the 1999 season were below expectations. The greatest yields were achieved from the cultivar Sanna (114 g/plant) at the University of Saskatchewan site. Unfortunately, these yields are still approximately one quarter of the yield reported from Sweden, where this cultivar is commonly grown.

Table 20. Mean survival of blueberry cultivars 1997, 1998, 1999.				
Site	**Cultivar**	Mean Survival (%)		
		1,997	**1998**	**1,999**
Love	Northblue	53 +/- 46	6.7 +/- 12	0
	Northcountry	53 +/- 50	0	0
	Northsky	93 +/- 11	13 +/- 23	0
Nipawin	Northblue	64 +/- 36	100 +/- 0	100 +/- 0
	Northcountry	36 +/- 11	100 +/- 0	100 +/- 0
	NorthSky	96 +/- 12	100 +/- 0	100 +/- 0
	Chignecto	Trial was planted during the 1998 season.		100 +/- 0
	Cumberland			93 +/- 11
	#315			100 +/- 0
Pike Lake	Northblue	6.7 +/- 11	100 +/- 0	60 +/- 10
	Northcountry	50 +/- 14	92 +/- 12	60 +/- 10
	Northsky	47 +/- 31	92 +/- 11	60 +/- 20
U of S	Chignecto	Trial was planted during the 1998 season.		100 +/- 0
	Cumberland			93 +/- 11
	#315			100 +/- 0
Mean of 3 replicates. +\- values are the standard deviation of the mean.				

Table 21. Mean survival of lingonberry cultivars, 1997, 1998, 1999.				
Site	**Cultivar**	**Mean Survival (%)**		
		1997	**1998**	**1999**
Love	Red Pearl	93 +/- 11	63 +/- 20	75 +/- 43
	Regal	100 +/- 0	13 +/- 23	73 +/- 31
	Sanna	60 +/- 52	80 +/- 35	100 +/- 0
	Splendor	100 +/- 0	80 +/- 20	100 +/- 0
	Sussi	87 +/- 11.5	53 +/- 23	67 +/- 23
U of S	Red Pearl	100 +/- 0	100 +/- 0	100 +/- 0
	Regal	100 +/- 0	100 +/- 0	100 +/- 0
	Sanna	100 +/- 0	100 +/- 0	100 +/- 0
	Splendor	100 +/- 0	100 +/- 0	100 +/- 0
	Sussi	100 +/- 0	100 +/- 0	100 +/- 0
Nipawin	Regal	100 +/- 0	80 +/- 35	60 +/- 53
	Sanna	100 +/- 0	83 +/- 20	93 +/- 12
	Sussi	100 +/- 0	73 +/- 46	93 +/- 12
Pike Lake	Red Pearl	67 +/- 11	73 +/- 11.	93 +/- 12
	Regal	100 +/- 0	80 +/- 20	87 +/- 12
	Sanna	100 +/- 0	100 +/- 0	100 +/- 0
	Sussi	100 +/- 0	100 +/- 0	100 +/- 0
Mean of 3 replicates. +\- values are the standard deviation of the mean.				

Table 22. Yield of Lingonberry cultivars, 1999.			
	Location	**Cultivar**	**Yield per plant (g)**
	Love	Red Pearl	0 +/- 0
		Regal	0 +/- 0
		Sanna	6.2 +/- 4.4
		Splendor	4.5 +/- 2.6
		Sussi	4.9 +/- 2.8
	U of S	Red Pearl	19.9 +/- 19.2
		Regal	24.4 +/- 34.6
		Sanna	114.7 +/- 154
		Splendor	0 +/- 0
		Sussi	58.6 +/- 49.2
	Nipawin	Regal	0 +/- 0
		Sanna	0 +/- 0
		Sussi	0 +/- 0
	Pike Lake	Red Pearl	0 +/- 0
		Regal	6.7 +/- 8.3
		Sanna	49.5 +/- 22.8
		Sussi	9.8 +/- 9.6
Mean of 3 replicates. +\- values are the standard deviation of the mean.			

4) Indications For Further Development

Data collection from these trials will be continued over the next few years, and eventually will be distributed to the industry, using resources associated with the Native Fruit Development Program's strategic funding.

5) Information Sharing

A) Publications

Papers In Non -Refereed Journals

Zatylny, A. and R.G. St-Pierre. 1998. The Lingonberry. A Wild Cranberry For Your Backyard. The Gardener 4(2): 22-23, 49. (Summer 1998).

Conference Proceedings

St-Pierre, R.G. and H. Tulloch. 2000. Cultivar evaluation trials and new cultivar development for native fruit species. pp. 11-12 in Canada-Saskatchewan Agri-Food Innovation Fund, Horticulture Industry Workshop, March 6, Saskatoon, SK.

Reports

St-Pierre, R.G. 1999. New cultivar development and cultivar evaluation trials for native fruit species. Progress Report - October 15 for the Canada-Saskatchewan Agri-Food Innovation Fund.

St-Pierre, R.G. 1999. New cultivar development and cultivar evaluation trials for native fruit species. Summary Report - July 31 for the Canada-Saskatchewan Agri-Food Innovation Fund.

St-Pierre, R.G. 1999. New cultivar development and cultivar evaluation trials for native fruit species. Progress Report - April 15 for the Canada-Saskatchewan Agri-Food Innovation Fund.

St-Pierre, R.G. 1999. New cultivar development and cultivar evaluation trials for native fruit species. Saskatchewan Irrigation Development Centre 1998/99 Annual Report; p 152-153. March.

St-Pierre, R.G. 1998. New cultivar development and cultivar evaluation trials for native fruit species. Progress Report - October 15 for the Canada-Saskatchewan Agri-Food Innovation

Fund.

St-Pierre, R.G. 1998. New cultivar development and cultivar evaluation trials for native fruit species. Progress Report - October 15 for the Canada-Saskatchewan Agri-Food Innovation Fund.

St-Pierre, R.G. 1997. New cultivar development and cultivar evaluation trials for native fruit species. Progress Report - October 15 for the Canada-Saskatchewan Agri-Food Innovation Fund.

St-Pierre, R.G. and W. Ziehl. 2000. Fruit quality screening for the development and evaluation of saskatoon, chokecherry, and other native fruit cultivars and germplasm. Progress Report - March 1, for Saskatchewan Agriculture and Food, Agriculture Development Fund.

St-Pierre, R.G. and W. Ziehl. 1999. Fruit quality screening for the development and evaluation of saskatoon, chokecherry, and other native fruit cultivars and germplasm. Progress Report - March 1, for Saskatchewan Agriculture and Food, Agriculture Development Fund.

St-Pierre, R.G. and C. Greuel. 1998. Fruit quality screening for the development and evaluation of saskatoon, chokecherry, and other native fruit cultivars and germplasm. Progress Report - March 1, for Saskatchewan Agriculture and Food, Agriculture Development Fund.

B) Presentations

St-Pierre, R.G. and H. Tulloch. 2000. Cultivar evaluation trials and new cultivar development for native fruit species. Canada-Saskatchewan Agri-Food Innovation Fund, Horticulture Industry Workshop, March 6, Saskatoon, SK.

St-Pierre, R.G. 1997. Native Fruit Production. Field Day at the Saskatchewan Irrigation Development Centre, Outlook, SK. July 11.

Greuel, C. 1997. Measuring Fruit Quality. From Field to Freezer. Chilling and Freezing Technologies for Small Fruits. Saskatchewan FoodTalk. Saskatoon. April 25 and 26.

St-Pierre, R.G. 1997. Propagation of chokecherries - a practical approach for the grower. Fruit Growers' Society of Alberta. Saskatoon Berry - Chokecherry Production Workshop. March 8. Edmonton, AB.

St-Pierre, R.G. 1997. Aspects of black currant production - a practical approach for the grower. Fruit Growers' Society of Alberta. Saskatoon Berry - Chokecherry Production Workshop. March 8. Edmonton, AB.

C) Experimental & Demonstration Orchards

Native fruit cultivar evaluation trial orchards at Saskatoon, Outlook, Indian Head, Yorkton, Pike Lake, Love and Nipawin.

6) Success & Relationship to Objectives

All objectives were achieved (refer to section on outputs and deliverables below).

7) Outputs & Deliverables

Project outputs have included:

1) Development of preliminary agronomic and fruit quality information for the cultivars established in these trials.

2) Potential release of 3 new black currant cultivars.

3) 1 paper in a non-refereed publication, 1 conference proceedings, 10 technical reports, 5 presentations, 7 experimental and demonstration orchards.

C) Personnel

R. St-Pierre - 5%
H. Tulloch - 15%
A. Zatylny - 10 %
J. Hall - 45%

D) Equipment

None.

E) Project Photos

Inserted in text where available.

F) Innovation Fund Acknowledgement

Refer to section on Information Sharing (above).

G) Copies of Information Developed

Attached.

H) Expense Statement

Sent under separate cover by Research Accounts, University of Saskatchewan.